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April 29, 1993

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APR 29 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Donna R. Searcy, Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

In re: Notice of Proposed Rule Making
PR Docket No. 92-235
Ex Parte Presentation

Dear Ms. Searcy:

Pursuant to the provisions of Subpart H of Part 1 of the Rules of the Commission, this letter will serve to advise you that on this date representatives of The Ericsson Corporation and Ericsson GE Mobile Communications, Inc. (collectively "Ericsson") met with representatives of the staff of the office of Commissioner Ervin Duggan to discuss issues relative to the above-referenced "Refarming" proceeding.

Specifically, Ericsson discussed issues it raised in the Notice of Inquiry phase of this proceeding, including, the need for the Commission to adopt a spectrum efficiency standard; the need to maintain flexibility to allow a variety of technologies to be used in the applicable radio bands; and certain technical limitations associated with the splitting of existing radio channels into very narrow band channels. Copies of written materials used in the presentation are attached hereto.

A copy of this letter was delivered to representatives of Commissioner Duggan's Office on this date.

Very truly yours,



David C. Jatlow
Counsel for The Ericsson Corporation and
Ericsson GE Mobile Communications, Inc.

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EGE - FCC Meeting

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

April 29, 1993

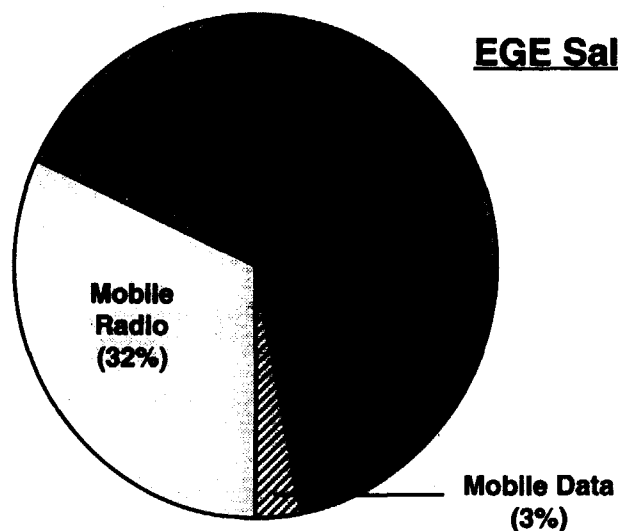
- **FCC Refarming of Spectrum Below 512 MHz**
 - **Viability of Migration Plan**
 - **Spectrum Efficiency Issues**
 - **Flexibility of Spectrum Management Policies**
 - **Flexibility of Technical Rules**

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Who Is Ericsson GE ?

We are a joint venture between two global communications companies:

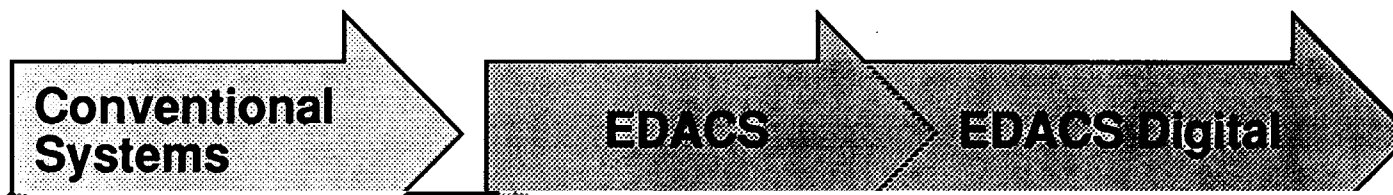


EGE Sales - \$1.1 B

What is EDACS

EDACS is our Enhanced Digital Access Communication System

- **Advanced Digital Trunked Communications System**
- **Frequency Band Independent (150 MHz - 900 MHz)**
- **Designed for maximum:**
 - **Reliability**
 - **Efficiency**
 - **Flexibility**
 - **Expansion capability**
- **EDACS is also our platform for future digital systems**



How Does EDACS Meet Your Requirements

EDACS is designed with features which make it a system an entire Organization such as a City, County or Utility can rely on.

EDACS uses frequencies more efficiently than current technology	Efficiency	An entire Organizations's communication needs can be served by EDACS
Users can be segmented into independent, autonomous groups	Value	All Operating Groups can share a single EDACS network
EDACS constantly monitors and adjusts itself without human intervention	Reliability	The system will perform without constant attention
EDACS is designed to "heal" itself if parts of the system become damaged	Durability	EDACS is designed to continue operating even under catastrophic conditions
Advanced, high speed digital design allows features not available in other systems	Flexibility	EDACS offers integration of advanced features: voice, data, status, messaging
The EDACS architecture and structure is very simple and modular	Longevity	The EDACS design can be expanded and upgraded to accomodate change

Spectrum Management - EGE Position

- **EGE Positions Regarding Spectrum Refarming:**
 - EGE supports the concept of improving spectrum management through Channel Transparent digital technologies
 - Minimize migration burden on users
 - Prevents wholesale obsolescence of existing investment
 - Encourage, establish & mandate progressive levels of *Spectrum Efficiency* based on emerging spectrum efficient technologies
 - Implement & grant Exclusive Use Licenses based on conversion to Spectrum Efficient technologies
 - Centralized Trunking (encourage immediately)
 - Spectrum efficient digital technologies with Channel Transparent migration
 - Do not *preclude* fair & full competition by restrictive *mandatory* policies in setting any *Technical or Interoperability* standards
 - Set spectrum efficiency standard with challenging timetable
 - Permit flexibility in application of technology to achieve spectrum efficiency
 - Encourage *wide choice* of technology for users
 - Create spectrum *bands* by user class
 - Permit flexibility for creation of contiguous Wideband channels ("stacking")

Refarming **Key Points for EGEMC/FCC**

EGE is FOR:

- **Simplification of Pt. 90 Rules**
- **Mandate of Spectrum Efficiency Improvements
("FCC should mandate Efficiency, not Technology")**

Refarming **Key Points for EGEMC/FCC**

EGE is AGAINST:

- **Very Narrow Band "Benchmark Technology" mandate by FCC (on basis of unproven technology)**
- **New Allocation of any adjacent narrowband channel that is co-sited with a channel "in-migration"**
- **Interleaving of User Classes in Allocation of Channels**
- **NPRM's Schedule of Implementation**
 - **VNB @ R&O (New Allocations)**
 - **NB @ 1996 (All Channels)**
 - **VNB @ 2004 (All Channel Phase-In by Market)**
- **Mandated Migration where no Spectrum Shortages Exist**



EGE Position on Trunking

- Migration to trunking in all frequency bands must be first step towards increased *Spectrum Efficiency* in the use of PLMR spectrum
- Extend Trunking to VHF (150-174 MHz) and to UHF (450-512 MHz) on existing channel plans
- Establish economic and regulatory Incentives such as exclusive use licenses to encourage migration
- Permit interconnection of similar agencies on State Wide or Nation Wide basis via wide area licenses
- Establish reasonable but challenging timetable for Trunking migration
- Validate Channel Transparent migration to increased spectrum efficiency

Advantages of Trunking

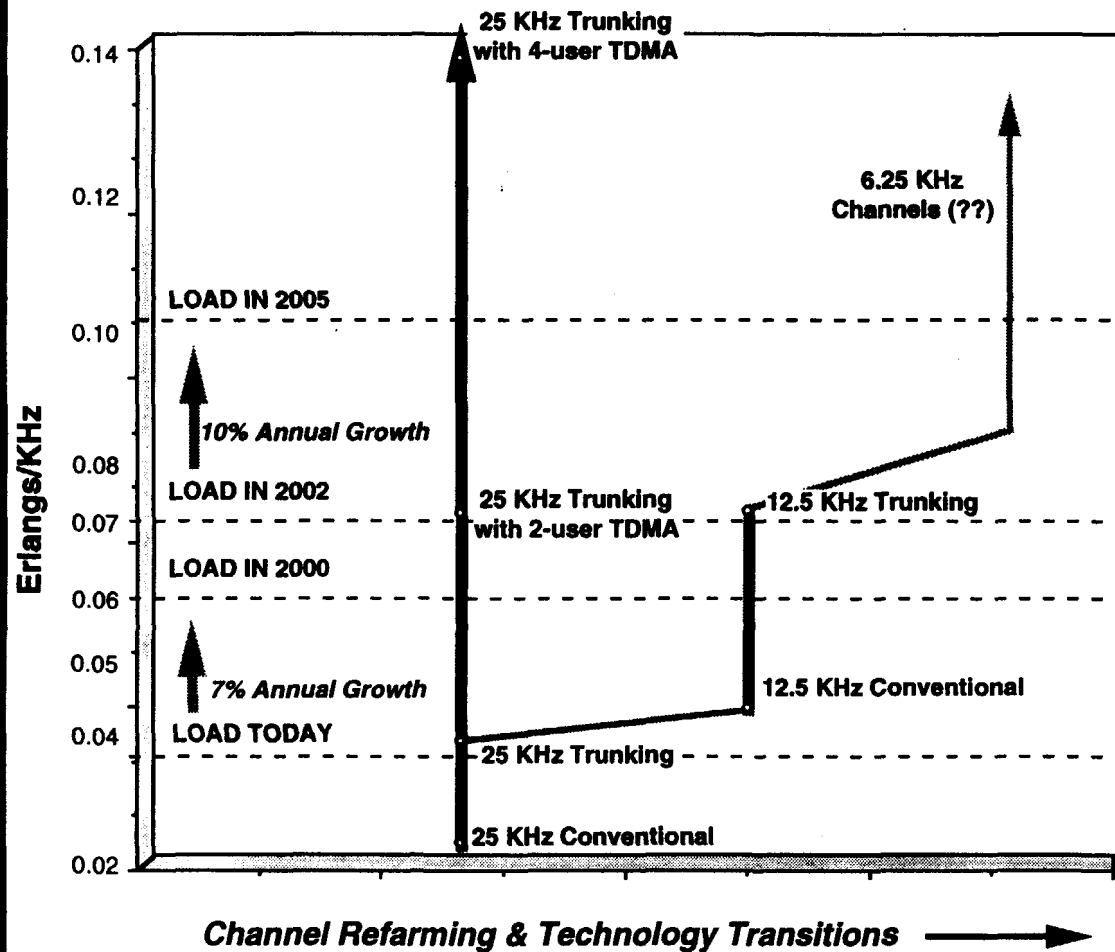
- One System for Multiple Departments or agencies
- Virtual Privacy for Individual User Groups
- Shared Channels for most efficient throughput
- Eliminates Co-channel Interference from Other Users
- Increased Spectral Efficiency
- Higher Degree of Integration of System Services (Voice, Data)

Barriers to Trunking

- Allocation of Frequencies & Licenses
- Lack of Regulatory or Economic Incentives
- User Concern With System Resilience & Security
- User Perceptions of Availability of Technology

Spectrum Management Decisions & Consequences

Erlangs/KHz vs. Users/25 KHz of Spectrum



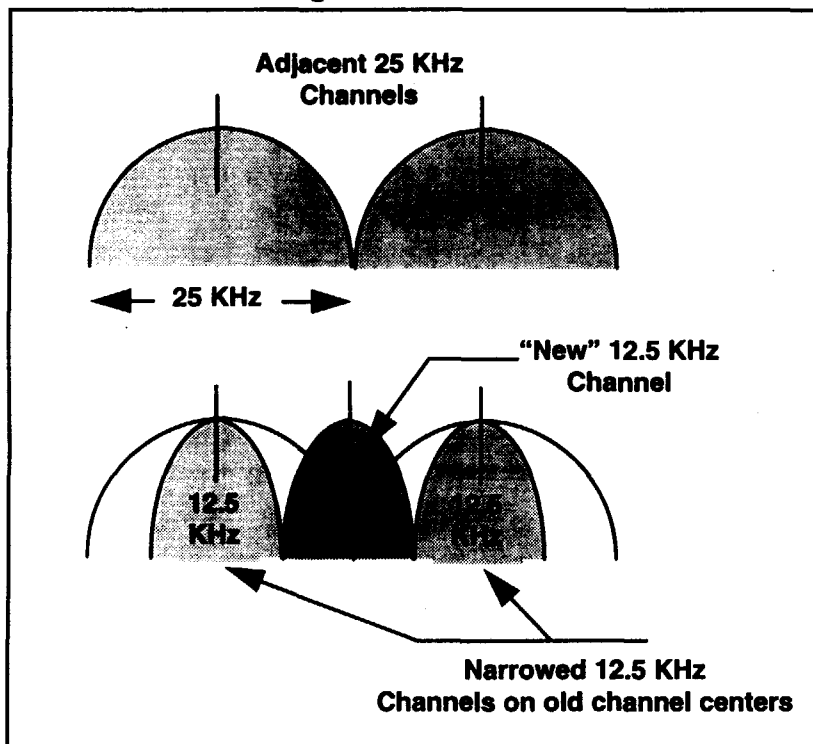
TRUNKING & TDMA are flexible alternatives for spectrum management vs. Periodic Refarming & Increasing Narrowband Channelization



Spectrum Efficiency

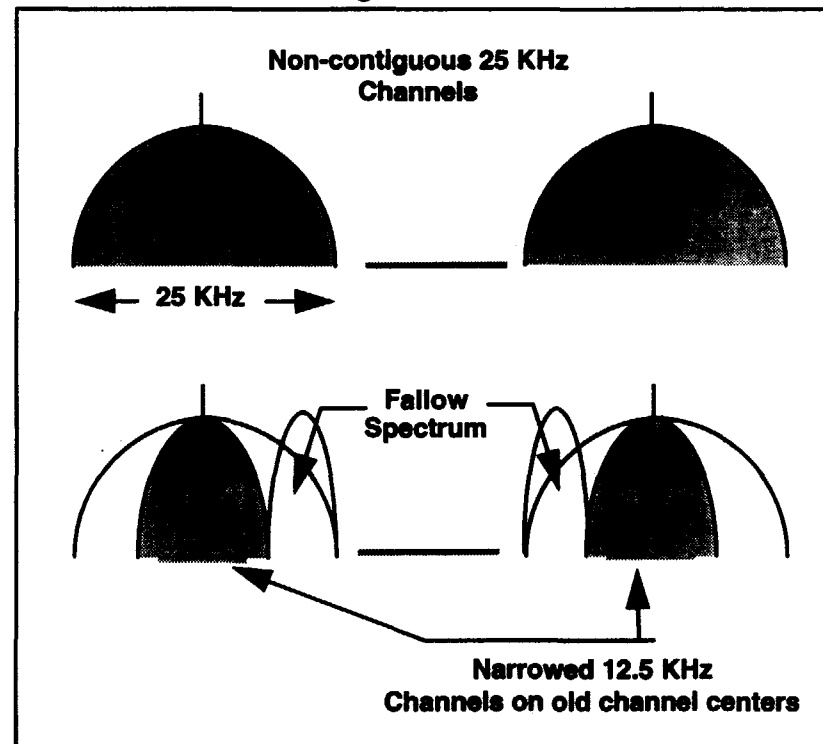
Does 25 kHz to 12.5 kHz Channel Splitting Yield a True 2:1 Gain ? NO !

Case 1: Contiguous 25 kHz Allocations



FDMA GAIN = 3 For 2 OR 50%

Case 2: Non-Contiguous 25 kHz Allocations

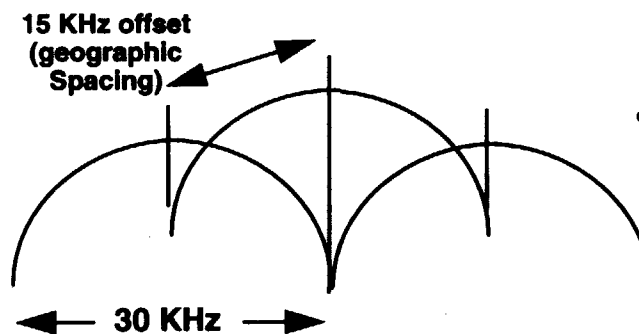


FDMA GAIN = 2 For 2 OR 0%



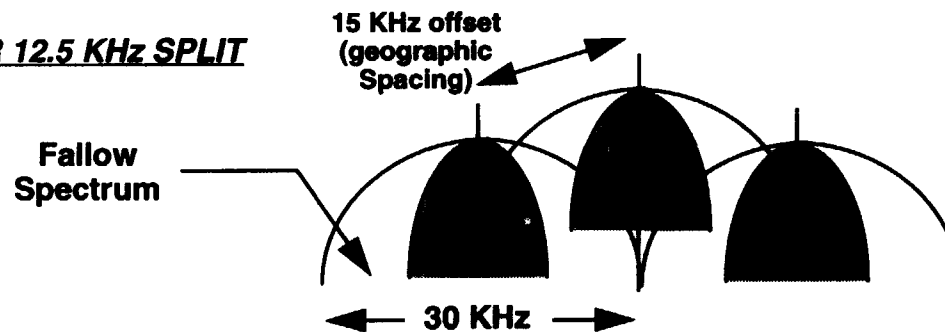
150 - 170 MHz: Gain From 12.5 KHz

TODAY



• 275 Channels Today

AFTER 12.5 KHz SPLIT

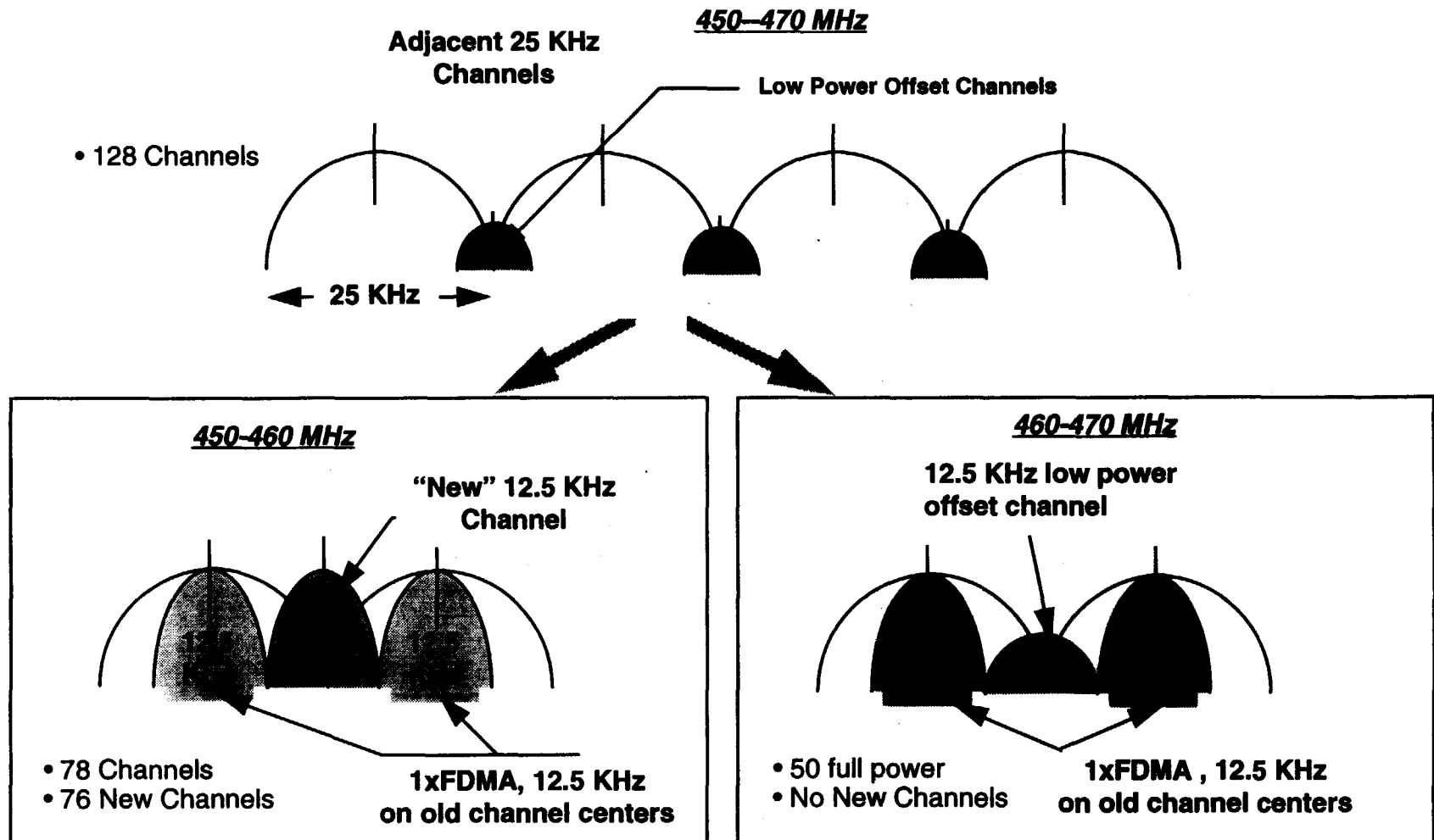


• 275 Channels after 12.5 KHz split
• NO New Channels

Net Gain In Channels at 150 - 170 MHz is 0%



APCO Proposal for 450-470 MHz

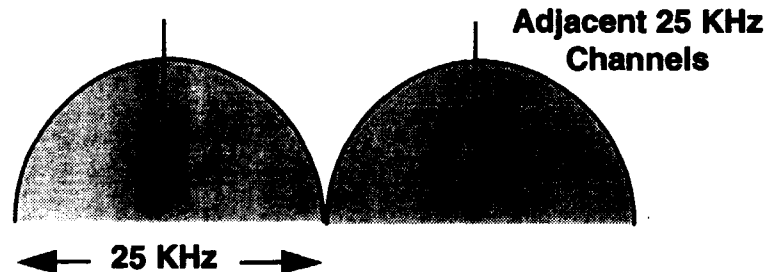


Gain in Spectrum Efficiency is Less Than 60%

800 MHz Migration Options With 12.5 KHz FDMA

806-821 MHz

- 70 Channels Today

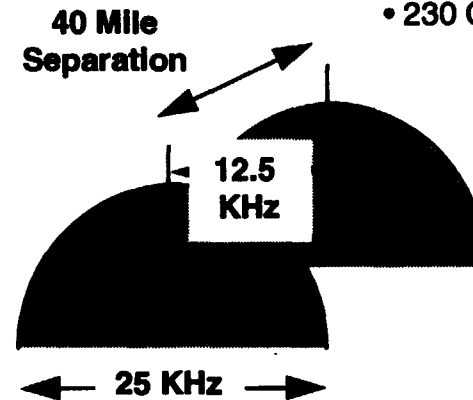


- 46 New Channels



821-824 MHz (NPSPAC)

- 230 Channels Today



- 0 New Channels

Public Safety Spectrum

NOW

Frequency Band	Current PS Channels
150-174 MHz	275
421-512 MHz	128
806-824 MHz	299
Total	702

AFTER 12.5 kHz FDMA

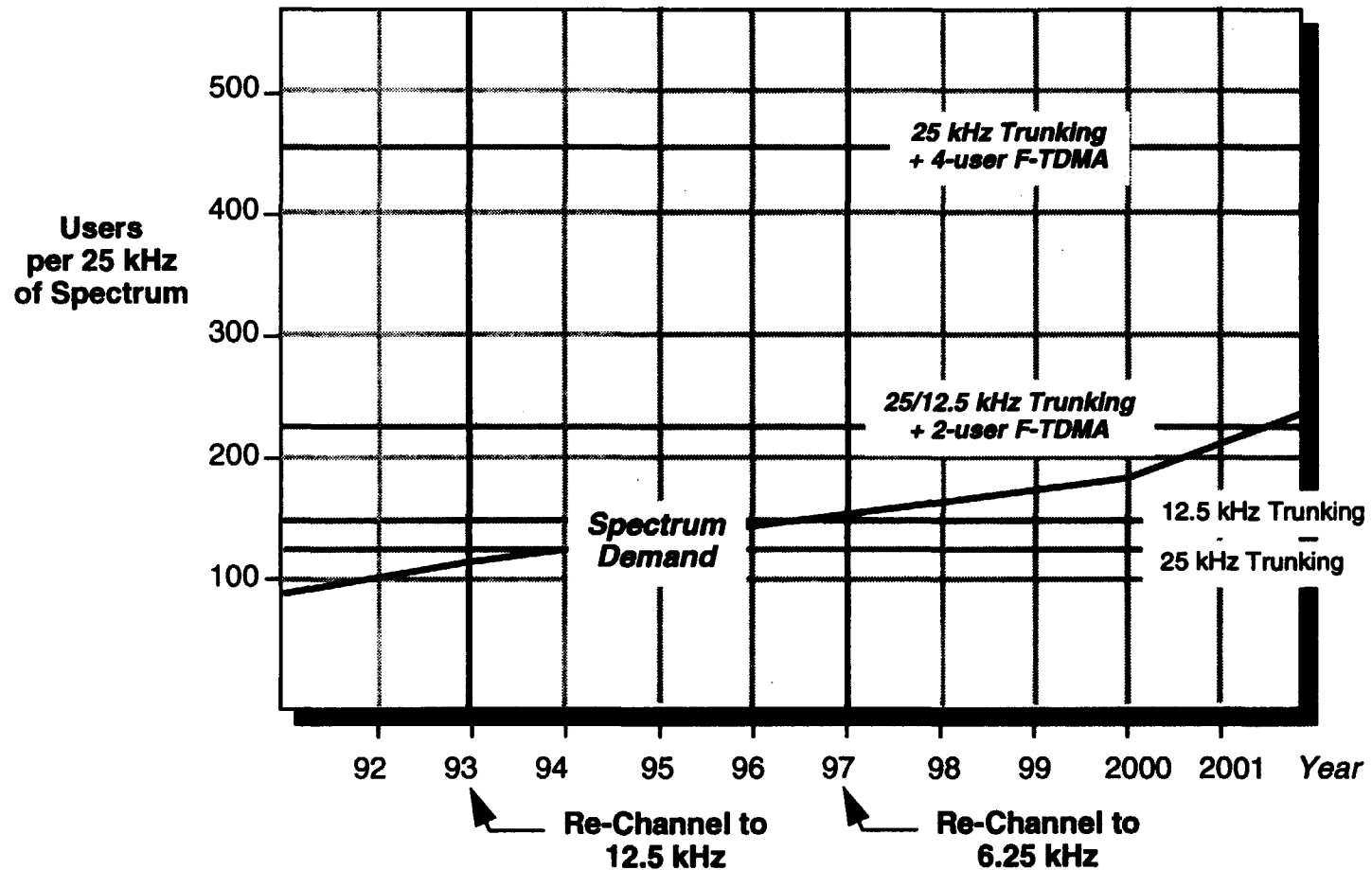
Frequency Band	Current PS Channels	Channels Created by FDMA	% Change
150-174 MHz	275	0	0%
421-512 MHz	128	76	60%
806-824 MHz	299	45	15%
Total	702	121	17%

**12.5 kHz FDMA Yields Insufficient
Capacity in 3-5 Years**

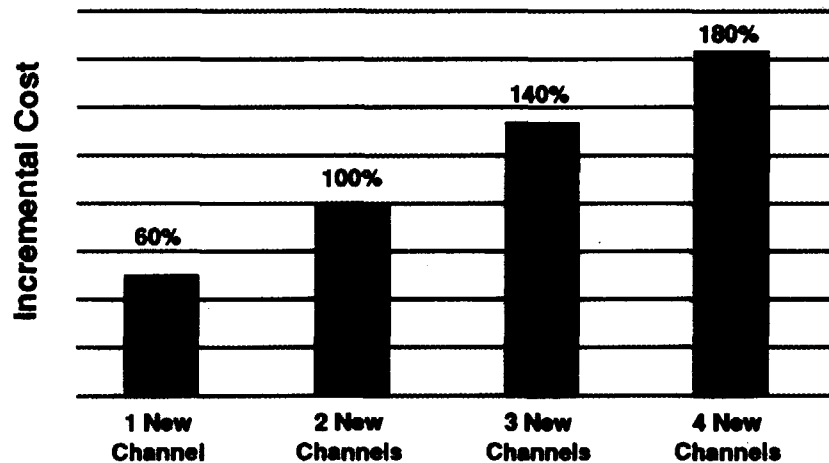
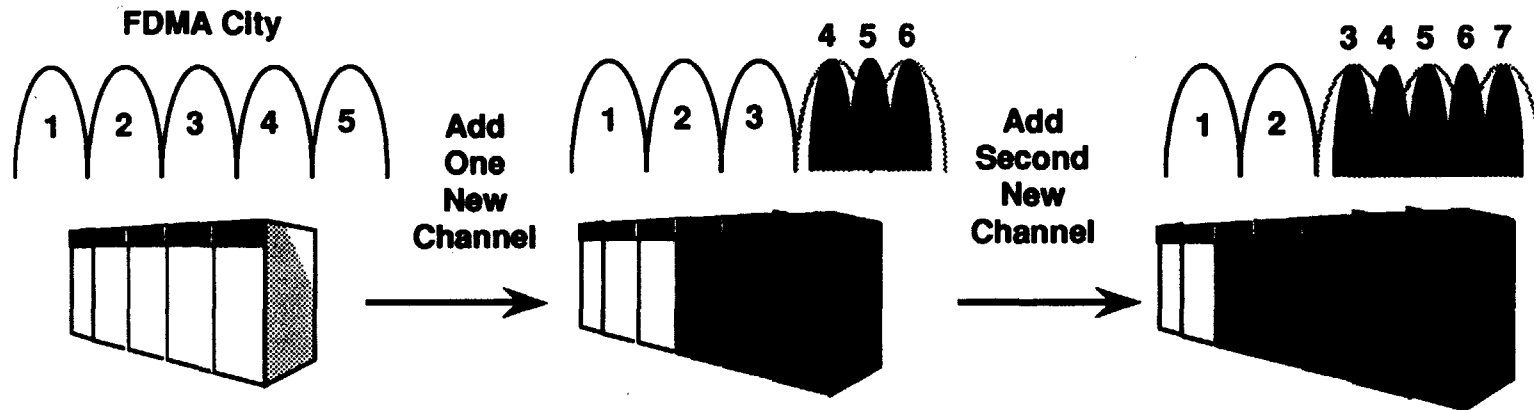


Spectrum Demand vs. Spectrum Management

F-TDMA Gains Spectrum Efficiency *Without* Successive Re-Channelization



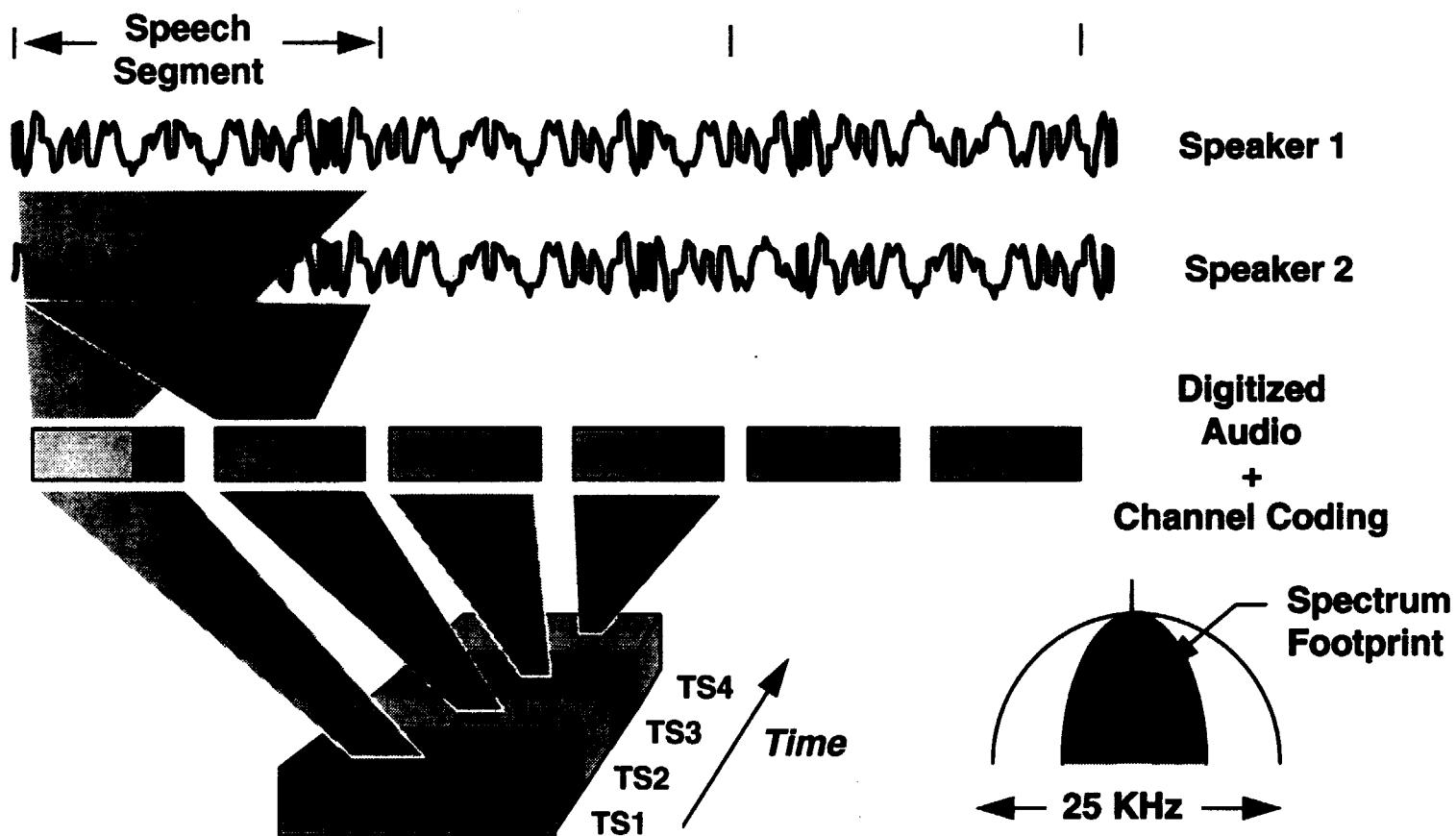
FDMA Economics



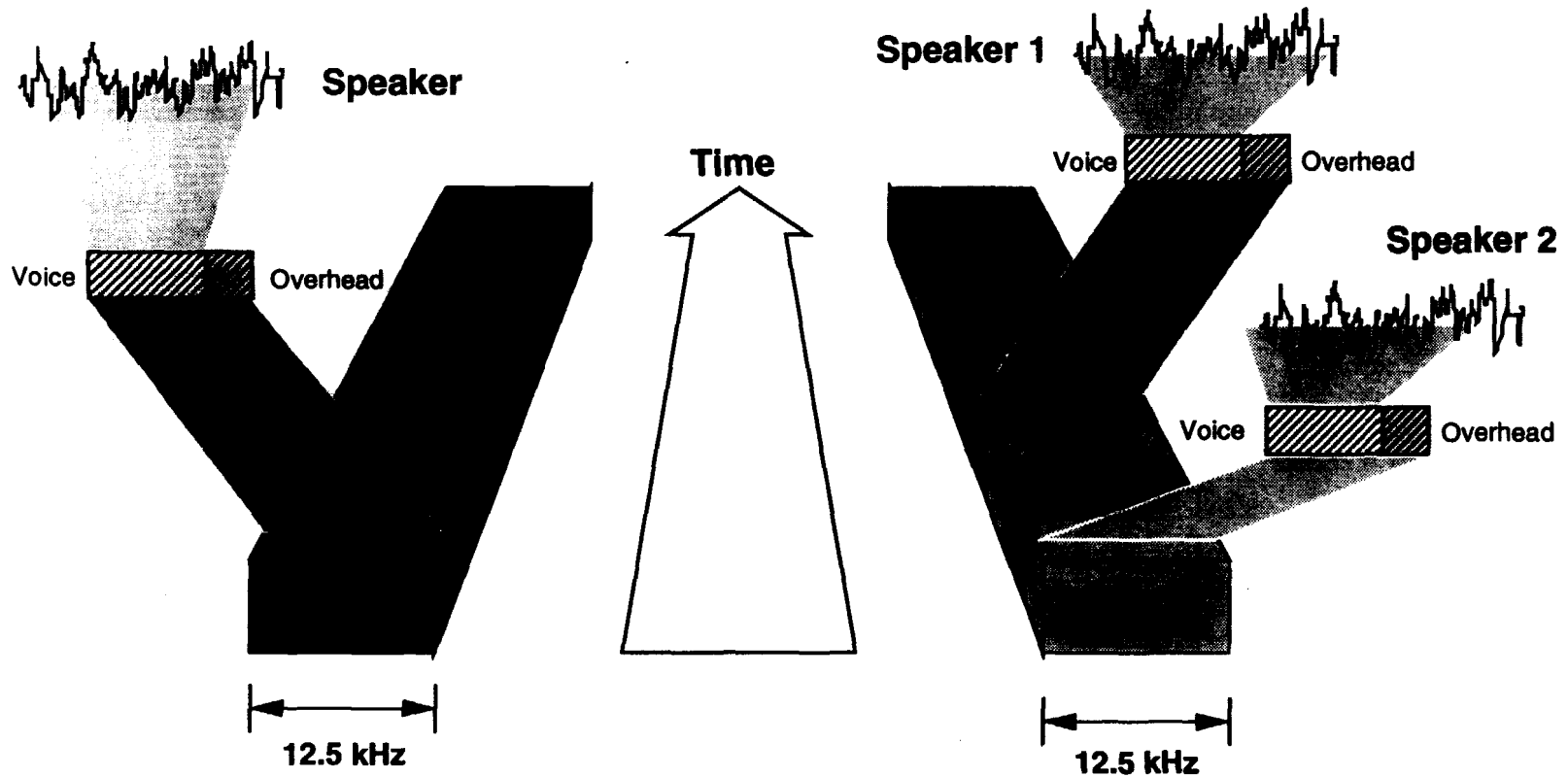
**20% Spectral
Efficiency Gain at
a Cost Increase
of 60%**



TDMA - How Does It Work ?



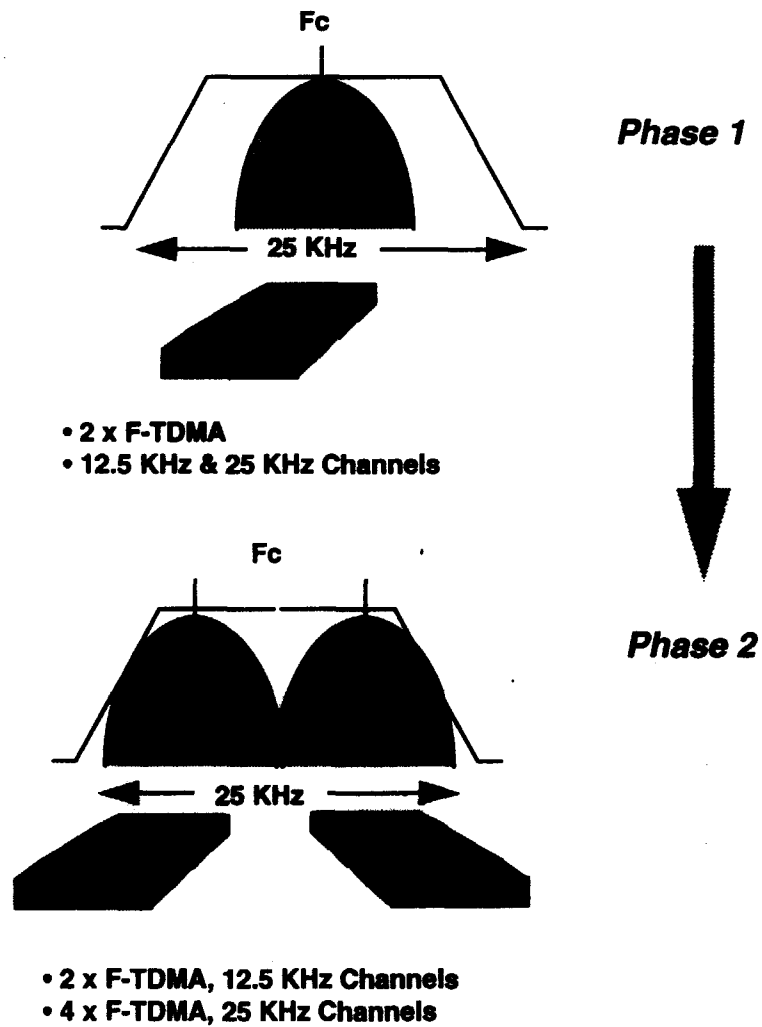
FDMA vs F-TDMA



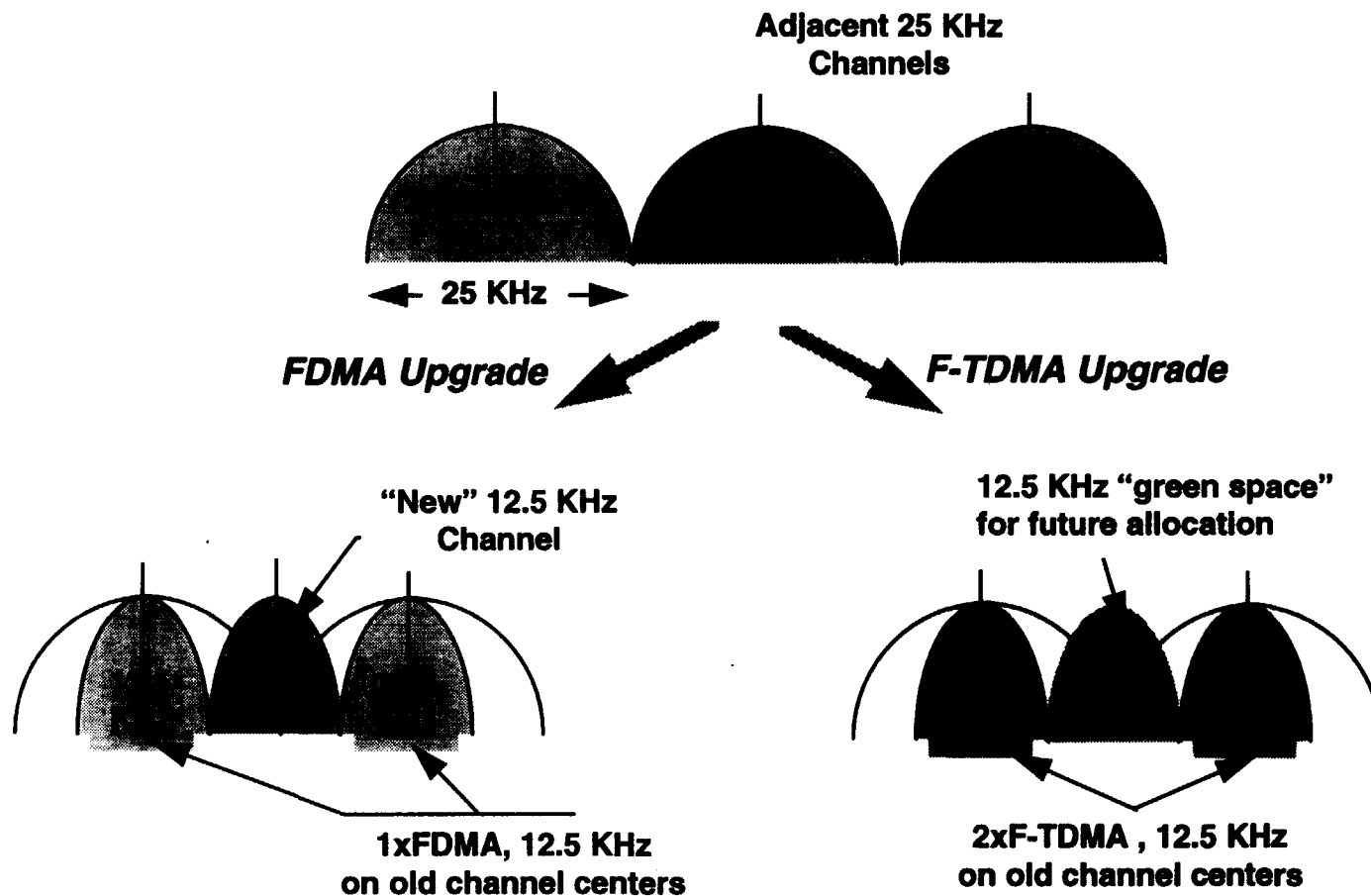
**FDMA Provides 1
User in 12.5 kHz**

**F-TDMA Provides 2
Users in 12.5 kHz**

F-TDMA: Migration



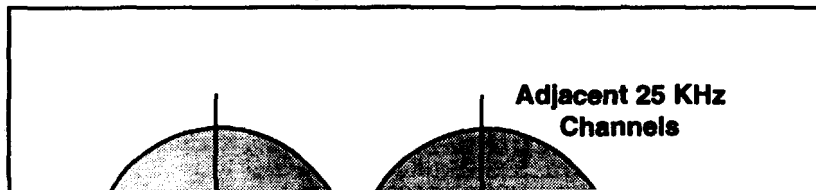
Migration Options: FDMA vs F-TDMA



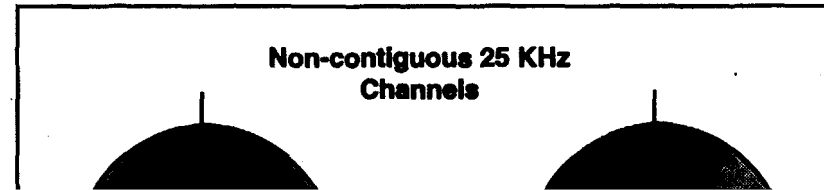
Spectrum Efficiency

Does F-TDMA on 25 kHz OR 12.5 kHz Yield a True 2:1 Gain ? YES !

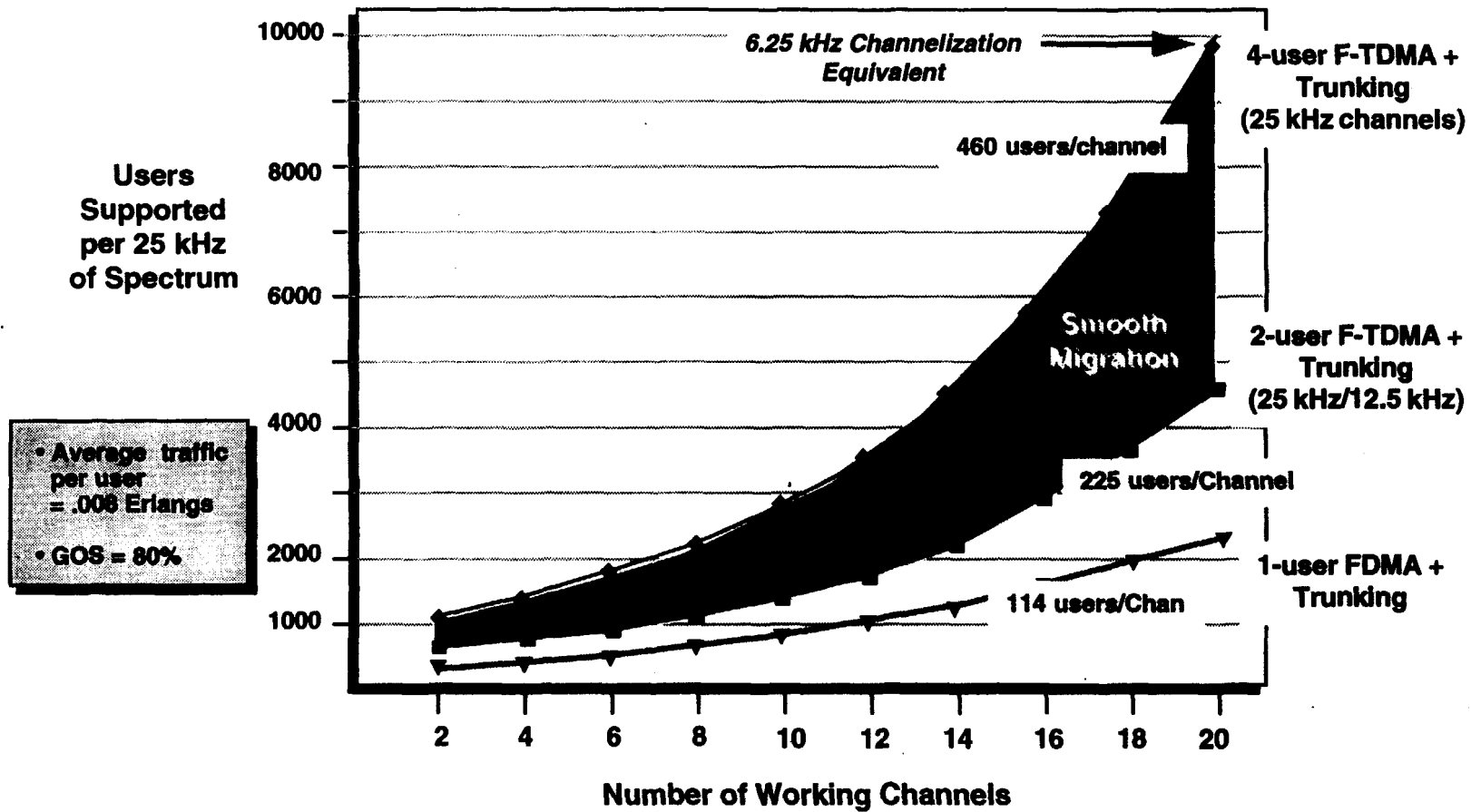
Case 1: Contiguous 25 kHz Allocations



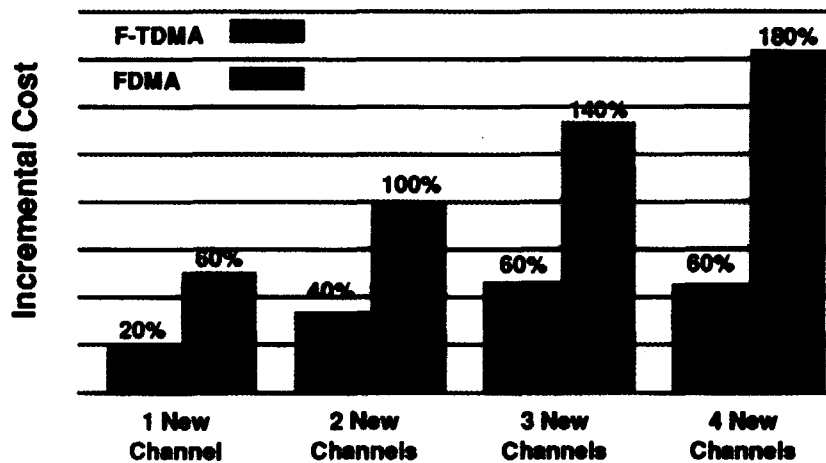
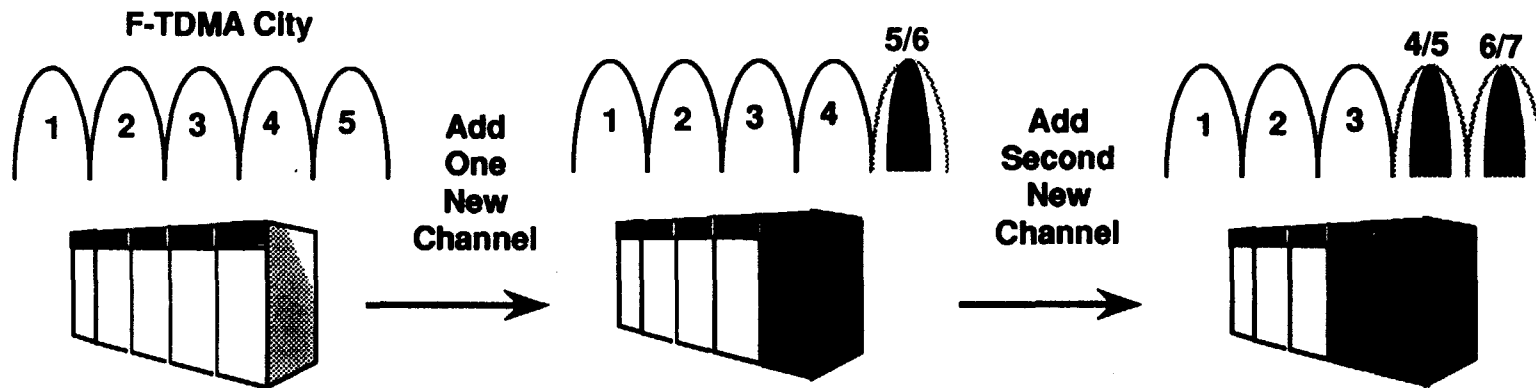
Case 2: Non-Contiguous 25 kHz Allocations



F-TDMA: Smooth Capacity Migration



F-TDMA Economics



**F-TDMA is
Significantly More
Cost Effective**